

Chapter 3

Approach to the Solution

3.1 Introduction

Based on the gathered knowledge the following approach was designed to create the automated chat system. The proposed system has the following three major areas,

- Identifying the question
- Extract the details
- Finding the best prepared answer

Apart from those three major functionalities the system will update the frequencies/probability of questions and its information.

3.2 Design

There are 7 main areas in the Chat bot, such as Identify the question, Extract the details, Database, Prepare the answer, Knowledge capture, Information capture and Knowledge engineer interface. With all these features Chat bot will try to give the best possible answer for customer queries.

3.2.1 Identify the Question.

The first step of the chat bot system is to identify the customer queries. To achieve this chat bot uses a set of sample queries stored in the systems knowledge base and an algorithm is used to determine the most suitable query. Refer Appendix A.

3.2.2 Extract the Details

After identifying the most suitable sample question which matches to the customer query, the chat bot tries to extract useful information from the queries. This is also achieved with the help of the sample questions stored in the knowledge base.

3.2.3 Database

The database of the chat bot has 2 parts. The first part is the knowledge base which maintains all useful information to identify the questions, extracted details from them and answer templates. The other section is the company database where the useful stock information and other relevant information are stored.

3.2.4 Prepare the Answer

With all the required information available, the chat bot moves to the next step, which is to prepare the answer. Based on the captured knowledge and the company database information it will select the most suitable pre defined answer (also stored in the knowledge base), to build the final answer filling the required information and produce to the customer.

3.2.5 Knowledge Capture

While providing answers to customer queries chat bot also has the ability to update its knowledge base by updating the frequencies to increase its accuracy for future queries.

3.2.6 Information Capture

This tool can be modified to capture key words in client queries with time and to save in the database and can be used in forecasting purposes and to increase high quality decision making.

3.2.7 Knowledge Engineer Interface

This is a separate application which shares the chat bot database and the company database and helps the Knowledge Engineer to maintain the chat bots' knowledge/data.

3.3 Scope of the project

- This application is developed only to handle queries related to a Book Shop.
- The system will identify only some of the queries based on the provided knowledge base.
- The system can only alter the probabilities of existing queries and answers, based on the usage of the system.

3.4 Limitations of the scope

- This system depends on the domain knowledge, which has to be provided by an external party (Knowledge Engineer) to the system.
- An operator or a Knowledge Engineer's support will be required to feed unhandled information as new knowledge to the system.

3.5 Technology Used



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Following are the summary of technologies which are being used in developing chat bot application.

Operating System	Windows XP
Programming Languages	Java, MySQL
Database server	MySQL
IDE	Eclipse, Net Beans

Table 3.1 - Technology Stack

Windows XP Operating System:

This is the most famous operating system produced by Microsoft. It is common among majority of the computer users and comes with two main versions; home and professional. To design the chat bot the Windows XP Home service pack 3 was used.

Java:

Java, created in 1991 by James Gosling of Sun Microsystems and initially called Oak, before being renamed to Java was originally designed for mobile cell phones. Java comes under the GNU General Public License.

It works as:

- Programming language - It can create any application a conventional language can.
- Development environment - It provides compiler, interpreter, documentation generator, class file package tool, etc.
- Application environment - Runs on any machine where the Java runtime environment is installed.
- Deployment environment - JRE and the environment in the web browser.

It has features such as, JVM (Java Virtual Machine an imaginary machine emulating the software or a real machine), Garbage collection, Code, etc. [23].

MySQL:



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My SQL is a popular open source relational database management system (RDMS) which runs as a server providing multi user access. Some of the large scale web products like Flickr, Nokia, YouTube, Wikipedia and Face book use the MySQL database. My SQL is a RDBMS and comes without GUI tools to administrator and manage data, but various third party frontends are available.

Eclipse:

This is a multi language software development environment with an integrated development environment (IDE). Eclipse released under the terms of Eclipse Public Licence is a free and open source software.

Net Beans:

This is an integrated development environment (IDE) and a platform framework for developing language such as Java, JavaScript, PHP, Python, etc. This framework was designed using Java and with the availability of the Java Virtual Machine (JVM) can be used in any operation system.

3.6 Software Licensing Issues

Since the whole system is developed using open source tools, spending large sums of cash purchasing license for software development tools, database management systems is not required.

3.7 Summary

This chapter covered the design issues, decisions taken in developing the proposed system and the technology proposed to design of the chat bot.



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